PROCEEDINGS

OF THE

CALIFORNIA ACADEMY OF SCIENCES

Fourth Series

Vol. XXX, No. 6, pp. 117-125 July 31, 1962

A HISTORY OF EXPLORATIONS FOR VERTEBRATES ON CERRALVO ISLAND, BAJA CALIFORNIA

By

RICHARD C. BANKS*

Department of Ornithology and Mammalogy,
California Academy of Sciences

The onset of a year-long study on various aspects of the biology of the terrestrial vertebrate animals of Cerralvo Island, Baja California, Mexico, prompted the compilation of this report concerning previous investigations on that island. A number of biologists have mentioned Cerralvo in reports of their activities in Baja California, but such discussions have usually been brief. The available information is scattered through a number of books and journals and has not previously been brought together into a single report.

The southernmost island in the Gulf of California, Cerralvo (variously spelled Ceralbo or Ceralvo) is approximately eighteen miles in length and four miles in greatest width. A high ridge extends nearly the entire length of the island, reaching the maximum elevation of 2518 feet (chart H.O. 1664, United States Navy Hydrographic Office, 24th ed., May, 1943). The nearest part of the peninsula of Baja California is Punta Arena de la Ventana, about five miles distant, to which Cerralvo was apparently connected in times of shallower seas.

Cerralvo is uninhabited, although Indians are reported to have lived there in early times. More recently a ranch was operated near the southern end of the island, but it is now abandoned. There are a number of temporary fishing camps on the west side of the island. Previous discussions of the is-

* Present address: Natural History Museum, San Diego, California.

land report that it is without fresh water (there was a well at the ranch), but there are several small springs at the heads of arroyos which provide limited quantities of good water. The scarcity of water, however, coupled with the general desert-like nature of the island, would not be attractive to modern human habitants.

Nelson (1921), Slevin (1923), and Goldman (1951) have given brief characterizations of the island in their reports. The following remarks are offered to supplement these descriptions. Cerralvo is a very rugged island, and much of the shoreline is sheer cliff rising from the water. There are a number of rock or gravel beaches, however, at the mouths of the larger arroyos, where landing is possible. These arroyos, which wind into the interior of the island with a gradual but perceptible increase in elevation, provide access to much of the island, although it is generally difficult to climb their steep walls. There is a large flat area of sand, with a good beach, at the southwest point of the island (often referred to as the south end), which somehow seems out of character with the rest of the steep, rocky island.

The vegetation of Cerralvo is similar to that of the Cape Region of Baja California in both species composition and general aspect. Vegetation is sparse near the northern end of the island but varies to the extreme of being nearly impenetrable in other areas. The most outstanding plant is the large cardón, *Pachycereus pringlei,* but other species of cactus are also abundant. There are large fig trees, *Ficus palmeri,* clinging to the walls of some of the arroyos, and patches of grass and rushes in moist areas near some of the springs. I have been told that there are palms in one canyon on the east side of the island.

Nelson (1921) gives a chronological history of the biological exploration of Baja California. The first mention of Cerralvo Island is to the effect that J. Ellis McLellan, representing the United States Biological Survey, worked out of La Paz from June to September, 1895, and, during this time, visited Cerralvo. I have been unable to find any published report on McLellan's work of this period, and his name has not been mentioned in any account of specimens taken on Cerralvo. Dr. Richard H. Manville, Director of the Bird and Mammal Laboratories of the Fish and Wildlife Service, successor to the Biological Survey, has informed me that the files of that office contain seven reports made by McLellan in 1895 "which pertain to Baja California, but in none of them is mention made of Cerralvo Island." McLellan's itinerary, reconstructed from his notes, does not include Cerralvo, but there are large periods of time unaccounted for (Manville, *in litt.*, Oct. 12, 1961). The nature, extent, and results of McLellan's visit to Cerralvo remain a mystery.

In the course of their extensive exploration of Baja California on behalf of the Biological Survey, E. W. Nelson and E. A. Goldman were on Cerralvo for parts of three days. They reached the island from Espiritu Santo Island

on February 11, 1906, and departed on February 13 (Nelson, 1921; Goldman, 1951). From Goldman's reported elevations of "10 to 30 feet" it appears that these men did not move far from their landing place on the beach at the south end of the island. In a description and discussion of the island, Nelson includes a list of the plants observed. He records the capture of two kinds of mice; these were described as endemic subspecies, *Perognathus penicillatus siccus* (Osgood, 1907) and *Peromyscus eremicus avius* (Osgood, 1909). The former was subsequently transferred to the species *Perognathus arenarius* (Nelson and Goldman, 1929). The use of 19 specimens of *Peromyscus* and 11 adult *Perognathus* in Osgood's descriptions apparently indicates the success of trapping by Nelson and Goldman.

Nelson (1921, p. 91) mentioned the occurrence of "iguanas which are not known from the mainland of the peninsula but do occur on some of the other islands farther north in the gulf." This reference is certainly to the genus *Sator* (see beyond), and must have been written in retrospect as that lizard was not described until 1919, thirteen years after Nelson was on the island. No account of reptiles observed or collected is given by either Nelson or Goldman. Concerning birds, Nelson (*loc. cit.*) states that "Fish hawks [*Pandion haliaetus*], sparrow hawks [*Falco sparverius*], ravens [*Corvus corax*], black-throated sparrows [*Amphispiza bilineata*], San Lucas house finches [*Carpodacus mexicanus*], and rock wrens [*Salpinctes obsoletus*] were among the few land birds noted here." No reference is made to any bird specimens which may have been obtained. The United States National Museum, however, contains four skins of the oystercatcher, *Haematopus ostralegus frazari*, which were taken by these men on Cerralvo. These unreported specimens apparently form the basis for Ridgway's (1919) inclusion of Cerralvo Island in the range of the species.

The next report of activity in exploration of the vertebrates of Cerralvo is for 1910. W. W. Brown, a well-known collector of Mexican birds, was employed in Baja California by John E. Thayer during the years 1906-1910. Nelson (1921, p. 146) outlines Brown's travels on the peninsula; he does not mention that Brown was on Cerralvo. Thayer (1911) reported on a series of eggs of the elegant tern, *Thalasseus elegans*, which were sent to him from Cerralvo (written "Cerraloo") but made it clear that the eggs were collected by Eduardo Manriquez, a friend of Brown's, and not by Brown himself. There is no evidence that Brown was on Cerralvo, although Mailliard (1923, p. 446) implies this by attributing to Brown a comment made by Thayer. The eggs referred to above, eighteen sets of one egg each, were collected on April 9 and 15, 1910; once in Thayer's private collection, they are now in the Museum of Comparative Zoology.

The United States Fisheries steamer *Albatross* carried members of an American Museum of Natural History expedition to the Gulf of California for a period of two months in the spring of 1911. A general account of this voy-

age and of the localities visited was prepared by C. H. Townsend (1916), the director of the expedition. Zoologists who devoted at least part of their time to terrestrial vertebrates included Townsend, H. E. Anthony, P. I. Osburn, and P. Bartsch. The *Albatross* stopped at Cerralvo for only three hours, from 3 to 6 P. M., on April 19. No mention is made of where the party landed on Cerralvo, but the map in Townsend's general report (*op. cit.*) suggests that it was on the western shore, near the north end.

Although a large number of herpetological specimens were obtained, Townsend made little mention of them. "The most interesting find here was the large black and white lizard (*Ctenosaura hemilopha*)..." of which seven specimens were taken (Townsend, 1916, p. 430). Altogether, the lizards collected on this voyage formed the basis for the descriptions of 23 new species, including two of a new genus, by Dickerson (1919). The genus described was *Sator*, endemic to Cerralvo and Santa Cruz islands. *Sator grandaevus*, from Cerralvo, was chosen as the type species of the genus. The ctenosaur regarded as so interesting by Townsend was described as a new species, *Ctenosaura insulana*, but Schmidt (1922), in reviewing the reptiles taken on the *Albatross* voyage, did not accept that designation; this form is now generally recognized as a subspecies of *C. hemilopha*.

A single mammal specimen, of the bat *Pipistrellus hesperis*, was taken while the *Albatross* party was on Cerralvo (Townsend, 1912). The island is mentioned in the accounts of four species of birds seen on the voyage (Townsend, 1923). These are the Heermann gull, *Larus heermanni*; ash-throated flycatcher, *Myiarchus cinerascens*; verdin, *Auriparus flaviceps*; and blue-gray gnatcatcher, *Polioptila caerulea*. Specimens of the flycatcher and gnatcatcher were obtained.

Most of the results of the early interest of the California Academy of Sciences in the biology of Baja California were lost in the disastrous fire of 1906. In an effort to replace those collections, the Academy sponsored field work in the Cape Region in 1919 and on the islands of the Gulf of California in 1921. Among the islands visited by the latter expedition was Cerralvo, June 6 to 8 (Slevin, 1923). Members of the expedition were interested in a variety of scientific fields; those concentrating on the biology of the terrestrial vertebrates were Joseph Slevin, leader of the trip, and Virgil W. Owen, representing the Department of Ornithology and Mammalogy.

Slevin's (*op. cit.*) general account of the voyage of the chartered schooner *Silver Gate* gives a brief description of each island visited, and mentions some of the more important observations, but records little about the specimens taken. Several reptiles, including *Verticaria* (now *Cnemidophorus*) *ceralbensis* from Cerralvo, were described as new species (Van Denburgh and Slevin, 1921a, 1921b), but no general account of the herpetofauna of the islands was published. Specimens of *Dipsosaurus dorsalis lucasanus* obtained by Slevin on Cerralvo were first reported by Van Denburgh (1922). Owen took

few specimens of or notes on the birds or mammals; no report on the mammals of the islands was published. Ornithological observations made by Selvin were incorporated into a report (Mailliard, 1923) on the birds and eggs taken on the expedition. The only birds reported from Cerralvo were the brown pelican, *Pelecanus occidentalis*; great blue heron, *Ardea herodias*; verdin; and black-throated sparrow. Eggs of the latter three species were obtained, as well as one skin of the sparrow. These specimens are now in the collections of the California Academy of Sciences.

The next recorded observations on Cerralvo Island were made by Donald R. Dickey. His notes were brought to light by van Rossem (1943), who wrote as follows: "In the summer of 1928, the late Donald Dickey spent several weeks cruising in the Gulf of California. Many mainland and insular points were touched, although usually not for more than a day or two at a time and often for only a few hours." The black vulture, *Coragyps atratus*, is "listed as present at Cerralvo Island on May 22, although in what manner or numbers is not stated. This appears to be the first record for Lower California..." There is no indication of a specimen to substantiate this record. A specimen of the oystercatcher is recorded for the same date.

Nearly a quarter of a century lapsed before the next exploration of Cerralvo Island by vertebrate zoologists. During the springs of 1952 and 1953 the Sefton Foundation research vessel *Orca* carried a party of biologists, mainly from Stanford University, to a number of the islands of the Gulf of California. The principal emphasis of these trips was placed on fishes and reptiles, and little or no information on other vertebrates was recorded. Dr. G Dallas Hanna, a member of the 1953 expedition, has reported (personal communication) that a number of unidentified bats flew from the well at the site of the old ranch.

Herpetologists taking part in the *Orca* expeditions included Frank S. Cliff, Jay M. Savage, Alan Leviton, and John P. Figg-Hoblyn, all of Stanford University, Joseph Slevin of the California Academy of Sciences, and Joseph Ball of the San Diego Zoo. No general account of these trips has been published.

The only publication resulting from the *Orca* trips which refers to Cerralvo is that by Cliff (1954). Cliff described as endemic to the island the snakes *Chilomeniscus savagei* and *Crotalus enyo cerralvensis*, and records as present also *Masticophis flagellum piceus* and *Crotalus mitchelli mitchelli*. Despite the previous herpetological work done on Cerralvo, this constitutes the first report of snakes on the island. Specimens obtained on these trips are housed in the Stanford Natural History Museum.

A later expedition from Stanford University, similarly sponsored by the Sefton Foundation, added *Lampropeltis getulus conjuncta* to the list of snakes known from Cerralvo. A single specimen, now in the Stanford Natural History Museum, was taken by John P. Figg-Hoblyn and Kenton L. Chambers in the

course of a brief visit to the southern end of the island on August 23, 1955 (Figg-Hoblyn and Banta, 1957).

Members of the staff of the American Museum of Natural History again visited the Gulf of California in 1957, on the schooner *Puritan*. Under the leadership of W. K. Emerson the vessel visited the islands on both coasts of Baja California. At the time that the ship reached Cerralvo, on April 20, the staff of vertebrate zoologists included Richard G. Van Gelder, mammalogist, and Oakes A. Plimpton, scientific assistant (Emerson, 1958). These two men set small mammal traps in three areas near their landing place on the south end of the island, just east of Piedras Gordas, taking one specimen of *Peromyscus* and one of *Perognathus* in the single night of trapping (Van Gelder, *in litt.*). A few lizards were also secured on the island.

Michael E. Soule and Robert G. Crippen visited Cerralvo for a few hours on March 6, 1960, landing near the south end of the island. In this short time a snake new to the island, *Eridiphas slevini*, was collected, the third known specimen of this species (Soule, 1961). This trip was sponsored by the Belvedere Scientific Fund and the California Academy of Sciences. Specimens obtained are in the Academy, the Stanford Natural History Museum, and the Museum of Vertebrate Zoology.

Also in 1960, Richard Etheridge and Allan Schoenherr collected herpetological specimens on Cerralvo, from July 14 to July 22. The base camp for this time was at the edge of the sand dune area near the south end of the island. Etheridge (1961) records the first amphibian known from the island, *Scaphiopus couchi*, and reports the first specimens of the lizards *Phyllodactylus unctus* and *Callisaurus draconoides draconoides* taken there. He also presents additional information on the habits and distribution of other reptiles known from the island. A complete list of the herpetofauna of Cerralvo is given for the first time. The specimens obtained by Etheridge are in the California Academy of Sciences.

Under the auspices of the Belvedere Scientific Fund, Robert G. Crippen and Richard C. Banks landed on Cerralvo Island late in the afternoon of October 24, 1960. A camp was established near the shore in an arroyo on the east side of the island about one-third of the way from the north end. The narrow mouth of this arroyo gave access to a rather broad area farther inland, and, with some difficulty, to the ridge of the island. Crippen engaged himself in work on lizards and Banks concentrated on birds and mammals, although both men spent some time with each of these animal groups. In five days of collecting on the island, twenty-six birds were preserved as study skins and two bird skeletons were saved, for a total representation of 19 species. In addition, ten bird species were observed but not collected. Eighteen mammals were prepared, including one specimen of *Pipistrellus*, two of *Perognathus* and 15 of *Peromyscus*. A large number of lizards were collected, of the species *Sator grandaevus*, *Ctenosaura hemilopha*, and *Cnemidophorus cer-*

albensis. Also obtained on this trip were the first specimens of *Bufo punctatus* known from the island; one adult and a number of tadpoles were secured in a small spring at the head of the arroyo in which we camped (Crippen, in press). We left the island on the morning of October 30. Specimens are on deposit in the California Academy of Sciences and the Museum of Vertebrate Zoology.

ACKNOWLEDGMENTS

I wish to thank the Belvedere Scientific Fund for the opportunity to visit Cerralvo Island in October, 1960. Appreciation is also expressed to Drs. Frank S. Cliff, G Dallas Hanna, Alan Leviton, and Richard G. Van Gelder for sharing with me information concerning their work on the island, and to Richard H. Manville for supplying information on J. Ellis McLellan. Dr. Benjamin H. Banta offered a number of helpful comments during the preparation of the report. Dr. Robert T. Orr read the manuscript and made valuable suggestions. This report was prepared during the tenure of a grant from the National Science Foundation at the California Academy of Sciences.

SUMMARY

From 1895 through 1960, Cerralvo Island, Baja California, Mexico, was visited thirteen times by investigators interested in the biology of the terrestrial vertebrate animals of the island. The major emphasis of the work has been on herpetology, although some work has been done on both birds and mammals. Cerralvo is characterized by the presence of two endemic snakes, *Chilomeniscus savagei* and *crotalus enyo cerralvensis*, three endemic lizards, *Sator grandaevus*, *Cnemidophorus ceralbensis*, and *Ctenosaura hemilopha insulana*. Two amphibians have been reported. Three native mammals are known from the island, two of which, *Peromyscus eremicus avius* and *Perognathus arenarius siccus*, are endemic. No complete list of the birds of the island is yet available, and that group has so far been relatively little studied.

LITERATURE CITED

Cliff, F. S.

1954. Snakes of the islands in the Gulf of California, Mexico. Transactions of the San Diego Society of Natural History, vol. 12, pp. 67-98.

Crippen, R. G.

1962. Two new insular records of amphibians from Baja California. Herpetologica, in press.

Dickerson, M. C.

1919. Diagnoses of twenty-three new species and one new genus of lizards from Lower California. Bulletin of the American Museum of Natural History, vol. 41, pp. 461-477.

Emerson, W. K.

1958. Results of the Puritan-American Museum of Natural History expedition to western Mexico. 1. General Account. American Museum Novitates no. 1894.

Etheridge, R.

1961. Additions to the herpetological fauna of Isla Cerralvo in the Gulf of California, Mexico. Herpetologica, vol. 17, pp. 57-60.

Figg-Hoblyn, J. P. and B. H. Banta

1957. *Lampropeltis getulus conjuncta* (Cope) on Cerralvo Island, Gulf of California, Mexico. Herpetologica, vol. 13, p. 192.

Goldman, E. A.

1951. Biological investigations in Mexico. Smithsonian Miscellaneous Collections, vol. 115, xiii + 476 pp.

Mailliard, J.

1923. Expedition of the California Academy of Sciences to the Gulf of California in 1921. The birds. Proceedings of the California Academy of Sciences, 4th series, vol. 12, pp. 443-456.

Nelson, E. W.

1921. Lower California and its natural resources. Memoirs of the National Academy of Sciences, vol. 16, pp. 1-194.

Nelson, E. W. and E A. Goldman

1929. Six new pocket mice from Lower California and notes on the status of several described species. Proceedings of the Biological Society of Washington, vol. 42, pp. 103-112.

Osgood, W. H.

1907. Four new pocket mice. Proceedings of the Biological Society of Washington, vol. 20, pp. 19-21.

1909. Revision of the mice of the American genus *Peromyscus*. North American Fauna no. 28.

RIDGWAY, R.

1919. The birds of North and Middle America. United States National Museum Bulletin no. 50, pt. 8.

SCHMIDT, K. P.

1922. The amphibians and reptiles of Lower California and the neighboring islands. Bulletin of the American Museum of Natural History, vol. 44, pp. 607-707.

SLEVIN, J. R.

1923. Expedition of the California Academy of Sciences to the Gulf of California in 1921. General Account. Proceedings of the California Academy of Sciences, 4th series, vol. 12, pp. 55-72.

SOULE, M.

1961. *Eridiphas slevini* (Tanner) on Cerralvo Island, Gulf of California, Mexico. Herpetologica, vol. 17, p. 61.

THAYER, J. E.

1911. Eggs of the elegant tern. Oologist, vol. 28, p. 171.

TOWNSEND, C. H.

1912. Mammals collected in Lower California, with descriptions of new species. Bulletin of the American Museum of Natural History, vol. 31, pp. 117-130.

1916. Voyage of the 'Albatross' to the Gulf of California in 1911. Bulletin of the American Museum of Natural History, vol. 35, pp. 399-476.

1923. Birds collected in Lower California. Bulletin of the American Museum of Natural History, vol. 48, pp. 1-26.

VAN DENBURGH, J.

1922. The reptiles of western North America. Lizards. California Academy of Sciences, San Francisco. 611 pp.

VAN DENBURGH, J., and J. R. SLEVIN

1921a. Preliminary diagnoses of new species of reptiles from islands in the Gulf of California, Mexico. Proceedings of the California Academy of Sciences, 4th series, vol. 11, pp. 95-98.

1921b. Preliminary diagnoses of more new species of reptiles from islands in the Gulf of California, Mexico. Proceedings of the California Academy of Sciences, 4th series, vol. 11, pp. 395-398.

VAN ROSSEM, A. J.

1943. Notes on three birds from Lower California. Condor, vol. 45, pp. 120-121.